

~~SECRET~~

6552224

Chief, Supplemental Programs Division, OC

22 November 1955

Chief, Engineering Division, OC

Transistorized Video Amplifier, E/VA-3

DLH
11-29-55

1. In response to your verbal request and specifications, the laboratory has completed an engineering model of the subject video amplifier. This model has been designated as the E/VA-3X, and is being forwarded to you as an attachment to this memorandum. Also attached is the technical data including schematic for this unit.

2. In the design of the final model, certain changes are being considered. For instance, it is anticipated that the battery can be made removable without the necessity for removing the entire top cover. Also, if the proper components can be obtained, it may be possible to reduce the dimensions of the unit to $3/4"$ x $1\frac{1}{2}"$ x $2"$ in size.

3. It should be noted that the pulse response of this amplifier has been tested down to a pulse width of 0.2 micro-seconds. Narrower pulses could not be generated with the test instrumentation available.

4. Please evaluate the E/VA-3X for your operational requirements and advise OC-E of the results.

25X1

Attachments:

- (A) 1 - E/VA-3X Video Amplifier
(B) 2 - Input Cables
(C) 2 copies - Technical Data, E/VA-3X

R&D/Lab/Jcm (22 November 1955)

Distribution:

- Original and 1 - Addressee
1 - R&D Lab ✓
1 - R&D Chrono
1 - OC-E Chrono
1 - Dev/s

DOCUMENT NO. _____

NO CHANGE IN CLASS. ☐☐ DECLASSIFIED

CLASS. CHANGED TO: TS S © 2010

NEXT REVIEW DATE: _____

AUTH: HR 70-2

DATE: 2 DEC 1980

REVIEWER: 064540

~~SECRET~~

SECRET

TECHNICAL DATA, E/VA-3X
VIDEO AMPLIFIER

I. OPERATION

On/Off switch functions to apply power to the unit when the switch is placed in the ON position.

II. CONNECTORS

Input: A cable receptacle is provided on one end of the case to accept cabled output of the crystal detector.

Output: The unit may be monitored by inserting a connecting cable from a telex earpiece into the telex type jack located on the side of the unit case.

III. BATTERY

One mallery 5.2 volt TR-114R mercury cell battery pack is the power source for the unit. The battery may be replaced by removing the two screws on top of the case and lifting the case lid exposing the battery chamber. The polarities indicated on the chamber floor should be observed when replacing the battery.

The battery life is conservatively estimated at 100 hours based on mallery charts for type #625 mercury cell. The battery voltage is nominally 5.2 volts and the current drain is approximately 1.7 milliamperes.

IV. RESPONSE CHARACTERISTICS

Test Method:

Sensitivity: Minimum detectable output above noise level as observed on scope.

Conditions: GR pulser provided various pulse widths at various pulse repetition rates. HP-618B signal generator modulated by GR pulser provided RF impulses to crystal detector (HP-420A)

Prior to each test run the HP-618B was adjusted for 0 DBM and the following sensitivity readings were recorded as observed on the output attenuator.

SECRET

SECRET

Page 2

Table:

PRF	DEM Sensitivity Versus Pulse Width (Microseconds)				
	0.2	0.5	1.0	5.0	10.0
pps					
30	-33.5	-33.9	-35.0	-38.0	-39.5
60	-33.9	-33.9	-35.5	-38.0	-40.5
100	-33.9	-34.0	-36.0	-39.0	-40.9
200	-35	-35.5	-37.5	-41.0	-42.6
500	-35.5	-36.5	-38.0	-42.0	-43.0
1 k	-36.0	-37.0	-38.9	-43.0	-44.0
2 k	-36.5	-37.5	-40.0	-44.0	-45.0
5 k	-37	-37.9	-40.5	-45.0	-46.0
10 k	-37.5	-38.5	-40.5	-45.5	-46.5
20 k	-38	-38.9	-42.0	-45.5	-47.5
50 k	-40.0	-41.0	-44.0	-46.0	-48.5
100 k	-40.0	-41.0	-45.0	-46.5	-48.5

V. SCHEMATIC

SECRET

SECRET

TECHNICAL DATA, E/VA-3X
VIDEO AMPLIFIER

I. OPERATION

On/Off switch functions to apply power to the unit when the switch is placed in the ON position.

II. CONNECTORS

Input: A cable receptacle is provided on one end of the case to accept cabled output of the crystal detector.

Output: The unit may be monitored by inserting a connecting cable from a telex earpiece into the telex type jack located on the side of the unit case.

III. BATTERY

One mallory 5.2 volt TR-114R mercury cell battery pack is the power source for the unit. The battery may be replaced by removing the two screws on top of the case and lifting the case lid exposing the battery chamber. The polarities indicated on the chamber floor should be observed when replacing the battery.

The battery life is conservatively estimated at 100 hours based on mallory charts for type #625 mercury cell. The battery voltage is nominally 5.2 volts and the current drain is approximately 1.7 milliamperes.

IV. RESPONSE CHARACTERISTICS

Test Method:

Sensitivity: Minimum detectable output above noise level as observed on scope.

Conditions: GR pulser provided various pulse widths at various pulse repetition rates. HP-618B signal generator modulated by GR pulser provided RF impulses to crystal detector (HP-420A)

Prior to each test run the HP-668B was adjusted for 0 DBM and the following sensitivity readings were recorded as observed on the output attenuator.

SECRET

Page 2

Table:

PRF	DBM Sensitivity Versus Pulse Width (Microseconds)				
	0.2	0.5	1.0	5.0	10.0
pps					
30	-33.5	-33.9	-35.0	-38.0	-39.5
60	-33.9	-33.9	-35.5	-38.0	-40.5
100	-33.9	-34.0	-36.0	-39.0	-40.9
200	-35	-35.5	-37.5	-41.0	-42.6
500	-35.5	-36.5	-38.0	-42.0	-43.0
1 k	-36.0	-37.0	-38.9	-43.0	-44.0
2 k	-36.5	-37.5	-40.0	-44.0	-45.0
5 k	-37	-37.9	-40.5	-45.0	-46.0
10 k	-37.5	-38.5	-40.5	-45.5	-46.5
20 k	-38	-38.9	-42.0	-45.5	-47.5
50 k	-40.0	-41.0	-44.0	-46.0	-48.5
100 k	-40.0	-41.0	-45.0	-46.5	-48.5

V. SCHEMATIC**SECRET**

SBT's = SB100
XTAL BIAS = $28\mu\text{A}$

E/VA-3X - VIDEO AMPLIFIER

